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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,725	11/08/2005	Rudolf Bonsch	MDP-103	5175

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EXAMINER	
PO, MING CHEUNG	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
05/11/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,725	BONSCH ET AL.	
	Examiner	Art Unit	
	MING CHEUNG PO	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01/29/2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This is the response to amendment filed on 01/29/2010 for application 10/537725.

2. Claims 1-3 are pending and have been fully considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over JOHNSON (U.S. 5,520,708) in view of KOVACS (WO 03/040081).

JOHNSON teaches a method to reduce the crystallization temperature of a mixture of a fatty acid oil ester-petroleum distillate fuel blend. JOHNSON teaches in lines 15 – 18 of column 3 that the esters used are prepared by transesterification of native oils. Preferably, the esters are taught in lines 19 - 32 of column 3 to be prepared by a type of **transesterification** known as alcoholysis in which the acyl groups in the triglycerides of the oils are exchanged with an alcohol such as **methanol**, so that nearly all the acyl groups are recovered as methyl esters.

JOHNSON teaches an example in lines 65 – 67 of column 3 and lines 1 – 14 of column 4 where a basic catalyst of sodium alkoxide is used and **stirred vigorously** with the reactants at **32°C (between 25 and 60°C)**.

JOHNSON further teaches in lines 19-31 of column 4 that the reaction mixture was then extracted with hexane, washed with water to induce a phase separation into a upper phase which is an ester-rich layer and a lower phase (**(b) forming a layer containing the crude methyl ester).**

JOHNSON does not seem to explicitly state that the methyl ester is intensively mixed with a strong acid.

However, JOHNSON further teaches that an acid such as **sulfuric acid or hydrogen chloride** may be used as the acid catalyst when large amounts of free fatty acids are present in the oil.

JOHNSON does not seem to explicitly state that the methyl ester is intensively mixed with to form an emulsion.

However, KOVACS teaches on the second paragraph of page 3 that the reaction that JOHNSON teaches is mixed and reacted in a static mixer and then the mixture is subjected to a high shear **(in-line mixing)** in the homogenizer to form an emulsion.

It would be obvious to one of ordinary skill in the art to repeat the above steps with the ester-rich phase. Specifically, it would be obvious to one of ordinary skill in the art to separate the ester-rich phase containing the methyl esters **((b) separating the layer form the rest of the reaction mixture)**, add **sulfuric acid**, heat to 32°C, subject the mixture to high shear **(in-line mixing)** and form an **emulsion ((c) intensively inline mixing the crude methyl ester later obtained at temperature between 25 and 60°C with a strong acid to form an emulsion**. The twice-reacted reaction mixture can then be again extracted with hexane, washed with water to induce a phase separation into a

upper phase which is an ester-rich layer and a lower phase **((d) separating an ester layer form the emulsion formed).**

The motivation to do so can be found in lines 55-64 of column 2 of KOVACS. KOVACS teaches that to reach a high conversion rate, the polar phase would need to be reacted once again. Furthermore, repeating the steps of a reaction is known to one of obvious skill in the art to increase conversion.

JOHNSON teaches in lines 26-28 of column 4 that the ester–rich layer may be washed with additional water until it became clear. **(subjecting the separated ester later to a thorough water wash)**

JOHNSON does not seem to explicitly teach a subsequent drying step.

However, it would be obvious to one of ordinary skill in the art to perform drying step following a water washing step for a compound intended to be used as biodiesel fuels.

The motivation to do so would be known to one of ordinary skill in the art. Water has a deleterious effect on biodiesel fuels.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Regarding claim 3, JOHNSON does not appear to explicitly state the water wash is carried out in a wash column according to the counter current principle or by means of a mechanically intensive mixer.

However, it would be obvious to one of ordinary skill in the art to use a separatory funnel to perform the water washes. A separatory funnel is a wash column

that utilizes the counter current principle to separate the organic layer and the aqueous layer.

One of obvious skill in the art would recognize that a separatory funnel is a common piece of equipment that is used in water washes.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments

5. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. DUNKEL (DE10043644) teaches a process for the production of biomethanol and bioethanol diesel comprising esterification and washing the biodiesel formed with phosphoric acid and water. DUNKEL appears to teach in paragraph 12 of the machine translation that the phosphoric acid washing step is done with temperature of approximately 60°C.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MING CHEUNG PO whose telephone number is (571)270-5552. The examiner can normally be reached on 9:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ming Cheung Po
Patent Examiner

/Ellen M McAvoy/
Primary Examiner, Art Unit 1797